Low-cost, Disposable, Tamper-Proof Bolt Seal

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https://www.fbo.gov/index?s=opportunity&mode=form&id=f5d8ac128dae9bf19bf31793fb6dd357&tab=core&_cview=0

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Description:

OBJECTIVE: Develop, prototype, and demonstrate a low-cost electronic reusable and/or disposable, tamper-proof cargo container/conveyance bolt seal for the maritime and air cargo environments.

DESCRIPTION: The current generation of bolt seals, despite being ISO-17712-2013 compliant, provides only limited protection from tampering and illicit entry into the container or conveyance. They can be defeated to gain access to the container or conveyance through removal and replacement, and disassembly and reassembly among other methodologies. Entries may be for the purpose of removing goods or merchandise but, they also present an opportunity for insertion of contraband (i.e., drugs, bulk currency, weapons, etc.), weapons of mass effect, as well as illegal aliens.
A number of more sophisticated and more secure devices have been developed and are available to industry as well as Customs and Border Protection (CBP) and Transportation Security Administration (TSA). While such units are very secure, they are also more costly and can be difficult to use. Except for compliance factors under the C-TPAT and FAST programs, the use of these devices are not mandatory to the industry, and as such, industry is reluctant to use these devices except in the case of highly valued and expensive merchandise. Meanwhile containers carrying more mundane cargo are essentially unprotected. This SBIR topic seeks a solution that would ensure the integrity of the container and its cargo between segments of the supply chain such as, for example, between a

freight consolidator and an air cargo facility subject to the requirements as established below. The bolt seal must have unique non-duplicable features such that it cannot be replaced, must not in any way or in any form be reassembled after disassembly and removal, and must not allow tampering in any manner. The electronics of such device may have GPS and time keeping capability and, if so equipped, may store location and time of a tamper event in non-volatile memory. The memory may be queried by a relocatable device and/or by a handheld device such as a smart phone. The vendor shall propose schema whereby a point of departure interrogation system shall relay presence of a seal and identification of such to the receiving facility. However, under no circumstances shall the actions described herein increase the time, effort, or workload on CBP or TSA Officers using the seals. In addition, the seals shall be designed so that they can be mass produced.
This SBIR topic description seeks proposals to prototype and test, in a field environment, an innovative, low-cost (i.e., ≤$15.00 each), electronic disposable and/or reusable tamper-proof cargo container/conveyance bolt seal.

PHASE I: Develop conceptual designs for the bolt seal and determine the technical feasibility and potential for transition to high-speed bulk manufacturing for each concept. A final report on the above is required at the conclusion of the Phase I period.

PHASE II: Phase II will develop one (1) or more low-cost prototype(s), electronic disposable and/or reusable tamper-proof cargo container/conveyance bolt seals for internal (Contractor) testing. Upon successful completion of internal testing, the Contractor shall deliver to the Government no less than six (6) prototypes including any support or ancillary equipment for external testing by the Government with assistance from the Contractor. These prototypes shall be delivered not later than seven (7) months prior to the end of Phase II period of performance to allow for six (6) months testing and one (1) month for analysis and final report development. The final report is to include, at a minimum, external test results (with Government assistance); disposable and/or reusable bolt seal business case; and, a definitive plan to transition to full scale production.

PHASE III: COMMERCIAL OR GOVERNMENT APPLICATIONS: This technology can benefit government entities such as the DHS operating components, CBP and TSA, as well as DOD, DOS, and ODNI. Commercial entities that ship high-value goods within the U.S. can benefit from the use of simple, cheap, and secure protection for their goods.